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ABSTRACT

Academic computer departments, whether called by this name or by others such as the department of computer science or data programing, can be of great assistance to other departments in the two-year college. Faculty in other departments need to know about computer applications in their fields, require assistance in the development of curriculum content and software for computer-assisted instruction, and need specialized help from people like programers for the achievement of specific objectives. The computer science department should make other departments aware of what hardware resources and services are available, should upgrade the computing skills of the faculty at large and, most importantly, should provide personnel who can make the computer meaningful to the entire academic curriculum. It is usually most helpful when the computer science department develops courses tailored to the academic needs of other disciplines, encouraging joint sponsorship whenever feasible, maintains a clearinghouse of information on computer applications in various subject areas, and lends its students to projects in other departments when their assistance is useful. (PB)

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THE ROLE OF ACADEMIC COMPUTER DEPARTMENTS IN THE USES OF COMPUTERS IN THE UNDERGRADUATE CURRICULA AT THE TWO-YEAR COLLEGE LEVEL

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WHAT IS THE TWO YEAR COLLEGE?

The two year college represents an educational endeavor born in, and unique to, this country. It has accepted a multi-faceted role in our educational system. The two year college, often called a "junior college", or else a "community college", has experienced phenomenal growth in the last few years; only recently has the rate of growth of enrollment in these colleges begun to stabilize. New two year colleges are, in many counties in many states, only just now being built; in or near urban areas, multi-campus colleges are not uncommon. In the recent past, these colleges have been supported by the local government - the county; only recently has the concept of a "regional network" of two year colleges come into discussion. Still another recent development is the creation of public colleges offering only the last two years, specifically to accept transfer of students from the two year and from other colleges.

These two year colleges (TYC) offer a chance to everyone, including those who cannot leave their geographic area to go away to college, those who cannot get admitted into a four year college, those who want specific job training, those who want general education. In these colleges you will find open door policies, leading to a student body more heterogenous than in any other type of college in the United States today. You will find students with problems related to social, economic, cultural, or academic deprevation along with graduates of the four-year colleges, foreign students, retired persons, veterans, homemakers, full-time policemen, bus drivers, construction workers, businessmen. These colleges claim to "serve the needs of their community." In doing this, most of them offer 4 major types of educational services:

1. Transfer programs, equivalent to the first 2 years of a four-year college
2. Career programs to prepare students for jobs
3. Continuing education programs, offered both day and evening, both on campus and off
4. Community services programs, usually offering non-credit courses needed by, or of interest to, the community.

These educational services encompass programs to train students for transfer in Liberal Arts, Education, Engineering, Pre-medical and Pre-dental, Mathematics, Business Administration, Social Studies; programs to train students for jobs as radiologists, air traffic controllers, medical records technicians, construction workers, nurses, computer programmers, policement, food service managers, radio/television technicians, commercial artists; works with local industry to perform in-house training at the industry; offers courses in income tax, sewing, auto repair; as well as almost all remedial subjects in mathematics or English.

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COMPUTER USAGE IN UNDERGRADUATE CURRICULA AT THE TYC

Computer use in the Transfer Programs should be, and could be, exactly like that needed in the first two years at a four year college or university. Unfortunately, it generally is not so far advanced. The absence of advanced courses, the lack of availability of grants, and the lack of support for research projects perhaps are part of the cause. In Career Programs, computer usage may be quite different, and in some instances, more demanding. In a highly dense medical community with a strong Allied Health Careers program, courses should pernaps include material about medical information systems. In an area with large construction demands, the Construction Technology Program may wish to offer instruction on the use of PERT/CPM for scheduling construction projects. In or near densely populated regions, instruction may be needed in Law Enforcement Programs on information retrieval systems. The uses of computers are themselves as varied as the many types of career programs currently available.

Faculty in the TYC must then attempt to analyze the future needs of students in each curriculum. You, the faculty, may find that:

1. You may wish to learn more about computer applications in your own particular field, but don't know how to start.
2. You may need assistance in development of curriculum content about the use of computers in your field to supplement courses presently being taught.
3. You may find enough content to justify the creation of a special course for students in your curriculum, but need someone specialized in that area to design and teach it.
4. You may want to do something specific on the computer in your field and need the assistance of a programmer to do it.
5. You may find that new software must be developed to make the computer more applicable to work in your field.

For example, a teacher in Business Administration, teaching Introduction to Business, may find that it is necessary to study the computer sciences field in order to better teach the unit on the influence and use of computers in business. After doing this, and designing units to do this teaching, the same teacher may learn about simulation models used to let students "run their own business" to learn business concepts. After obtaining a package program to accomplish this, the teacher must get it implemented - get it adapted to the computer that is available, get control card set-ups ready for students, learn to punch input data in proper formats. Later, after realizing the weak points of that particular game, the teacher may wish to improve it, requiring some programming skill, or programming assistance. Still later, after the new game is operational, someone must be in charge of production runs each week for all sections of the course. Over a period of a few years, that same teacher may have developed a great deal of computer expertise.

COMPUTING RESOURCES AT THE TYC

To accomplish good computer usage in your subject matter area, find out what your college has in resources: your computing capability, if any; your computing services center, if any; and your academic computer department, if any. Let us assume that your college already has, or can get, computing power. Many have a computing center, others have services via timesharing, still others have computing services via courier. Even in the most ideal of situations - where a computing services center already exists - you may still have problems with computer usage in the academic subject areas. Your computing center may be run by a manager/director in some places, by an academic department in others. In far too many cases, faculty in the academic department are put in complete charge of all computer activity, including administrative services! In other cases, the service center is there to be used exclusively for administrative purposes! And, even in those colleges where a manager has been charged with servicing all computing needs at that college, administrative needs often absorb all the services, leaving little for the academic needs. Most managers at the TYC do not recognize, as the four-year college counterpart does, any obligation to make computer instruction and information available to the faculty, making the center predominantly a service for administration with faculty given left-over time and little service.

The real need, then, is not for more equipment, but for more people to help to make the equipment meaningful in the academic curriculum. There are knowledgeable faculty in many departments who know what applications are relevant in their subject, but who do not have the necessary computer expertise, nor the extra time needed, to implement these applications.

Your academic computer department, by whatever name it has, may be able to help you. At the TYC, you will most often find the academic department named DATA PROCESSING; the goal of that department is most often to train business applications computer programmers. In many schools, however, this program is named COMPUTER SCIENCE, INFORMATION PROCESSING, or BUSINESS OPTION IN COMPUTER PROGRAMMING. Other TYC's offer more than the one career program, making others available in keypunch training, computer operations, data technician skills. Still others attempt to train scientific programmers, a program usually named SCIENTIFIC OPTION IN COMPUTER PROGRAMMING. Still other TYC's attempt to offer the first two years of the COMPUTER SCIENCE curriculum, now offered at the undergraduate level in many colleges, but often offered only at the graduate level. This program is often patterned after the guidelines laid down by CURRICULUM 68, a report by the ACM Curriculum Committee on Computer Science, given in the March 1968 issue of the Communications of the ACM. Make inquiries about what your college teaches; find out what their job objectives are; find out what needs they have.

SUGGESTIONS FOR IMPROVED COMPUTER USAGE IN THE UNDERGRADUATE CURRICULA

1. Communicate with your academic computer department. Find out what computing services they need; you may be surprised to find that they need better computing service, too. Perhaps a joint proposal to request an academic computer services coordinator could be made. Then look for a well-qualified person with the proper academic attitude toward the promotion of the use of computers and for service in implementing curricular matters. Try to have that person report to an academic dean, rather than manager of the computing center.
2. Encourage your academic computer department to maintain a "clearinghouse" of information about computing in the various subject matter areas. Many faculty in that department receive many new texts, free; they may receive as many as 12 different publications on a monthly basis, free. Then use it to search for new applications in your areas.
3. Encourage joint development of interdisciplinary courses, done possibly with you in a team teaching arrangement. Consider the use of "modules" in courses where a smaller amount of computer content is needed. Then convince your academic dean that you are being "interdisciplinary" and "cooperative" in filling the needs of the students by sharing the assignment.
4. Encourage the academic computer department faculty to develop courses to serve the various subject matter areas. Point out the need; offer them encouragement and support in getting the proposals through committees. Then audit their course to let them know it is a vital part of your curriculum.
5. Suggest that their students may be in need of "real live projects" to do as part of their course work, or as independent study. You may be able to get a team of students to complete the necessary software for your subject matter area. Keep in mind their talents - don't expect them to be experts yet, and above all, don't let them take control away from you.

HOW CAN YOU GET STARTED?

Faculty at the TYC teach 15 credits a semester, often amounting to 20 hours a week in class. They also serve on committees, work on new courses, work on budgets and schedules, write syllabi, etc. They pride themselves in being good teachers and on maintaining personal contact with all their students. Finding additional time in this busy schedule to work with the computer is indeed difficult. Yet implementing computer usage in your curriculum will take time, and will take people. It will be accomplished all the more quickly with the academic computer department and the subject matter department working together. As the computing field matures, the academic departments will become more well defined, jobs in the field will perhaps become certified, curricula will become stable. As the need increases for society to understand the technical revolution, more and more subject matter areas will exhibit a need for computer usage. Service courses from the computing department will perhaps be as necessary as those now offered by English or Mathematics. Therefore, let us work together, for our mutual benefit.